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GB 1563558 A GB 0895045 A GB 0746287 A
GB 0421415 A GB 0316420 A US 3881832 A

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(54) **Wire mesh**

(57) Wire mesh having improved strength characteristics and greater versatility of usage over mesh formed fr m round wire is made from wire rods (3, 4) each having at least one flat face for abutting contact with the flat faces of other wire rods in the lattice. The rods are preferably welded together. The rods may be of rectangular section in face-to-face, edge-to-face or edge-to-edge contact. The mesh may be used in panels, such as for fencing, or may be formed to channel shape to serve as containers, pallets or stillages or can be laid to provide a floor or walkway.

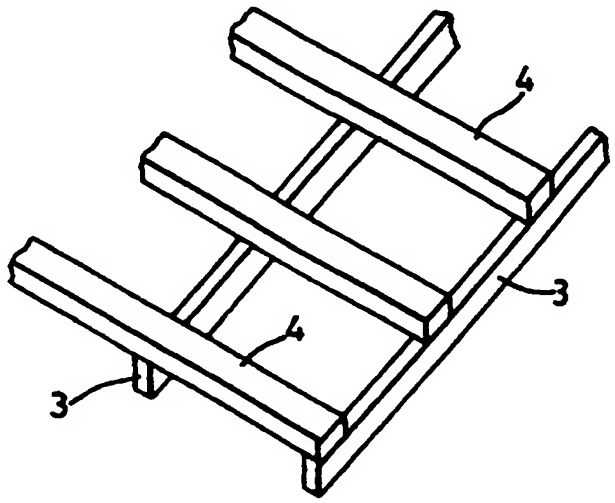


Fig. 2

GB 2 299 100 A

At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

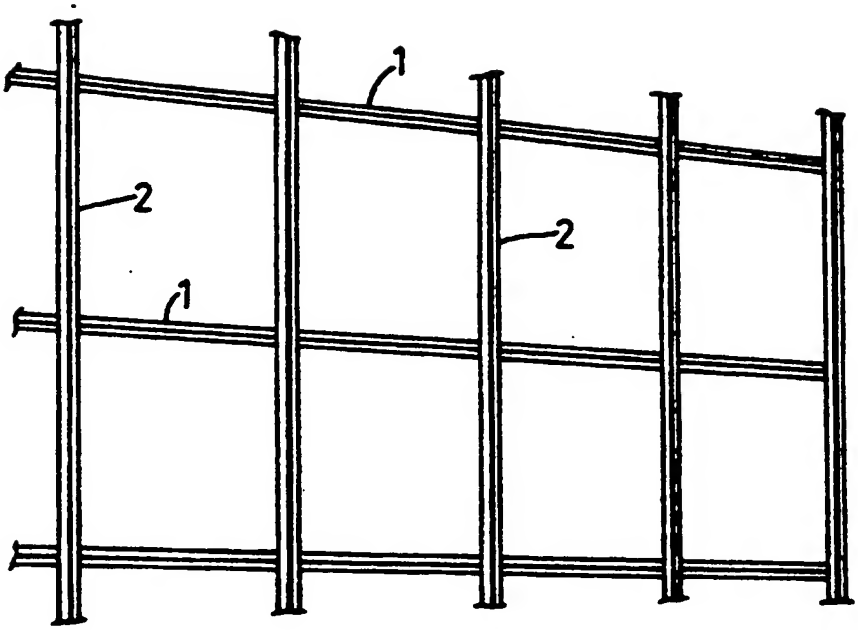


Fig. 1

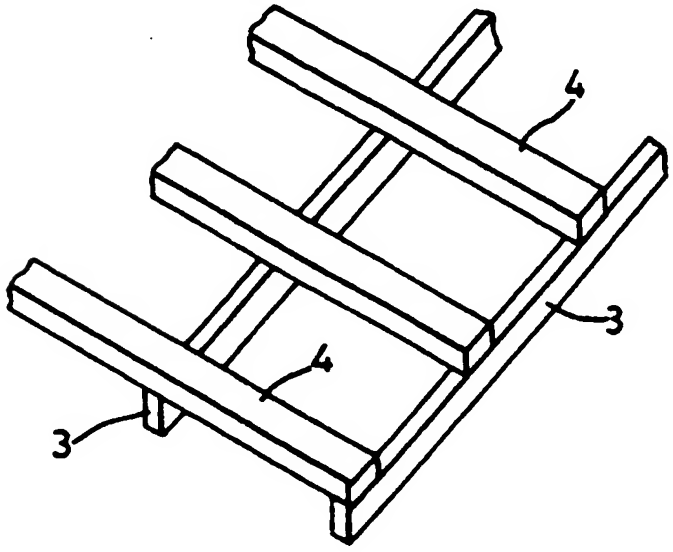


Fig. 2

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# WIRE MESH

This invention relates to wire mesh.

Ordinarily, wire mesh for use in panel form or for use as a shaped product, or in the production of a shaped product, is formed from round wire, laid in overlapping configuration to form a mesh of diamond, square, or rectangular pattern. The overlapping wires are secured together at their points of contact, such as by welding. However, considerable care and attention, and the employment of equipment of considerable precision, are needed to produce an effective weld between two round wires that are in no more than point contact, for otherwise a mesh of inadequate weld shear strength would be produced.

The object of the invention is to provide a wire mesh with a considerably enhanced weld shear strength, that at the same time has less exacting production requirements.

According to the present invention, a wire mesh comprises a lattice of wire rods, the wire rods each having at least one flat face for abutting contact with the flat faces of other wire rods in the lattice, to provide contact between wire rods over an area, and over which area the wire rods are secured together.

Preferably, and for simplicity of manufacture, the wire rods may be of rectangular cross-section, and the connection between wires in the lattice is preferably by welding. To provide the maximum area of contact between overlapping rods, they are laid on each other in face-to-face contact in either a square/rectangular pattern or in

substantially diamond formation. As a result, a mesh mode in accordance with the invention has a considerably enhanced weld shear strength over a mesh formed from round wires of an equivalent diameter.

Whilst maximum shear strength is achieved by having the wire rods in face contact, in the embodiment where the wire rods are of a rectangular section, to have the wire rods of one direction abutting by their edges the faces of the wire rods in the other direction still leaves an area of contact between the wires significantly greater than the area of contact between round wires. With such wire rods in this disposition and connected together by welding, not only is there provided a considerable shear strength but also is there provided a considerable rigidity of a wire mesh or panel in the direction of those wire rods sat on edge.

It would even be feasible to have edge to edge contact between the overlapping wires. There would still be provided a noticable increase in the area of contact between the wires in comparison with the contact between overlapping round wires, and thereby providing improved shear strength, and there would result a wire mesh or panel having a considerable rigidity in both directions.

The employment of rectangular wire involves simpler manufacturing techniques than with round wire, and this lends considerable assistance in the economic production of mesh with variable aperture sizes, to enable greater strength to be imparted to a length of mesh at precise required positions. Thus, in one e.g. panel, small aperture sizes

can be provided where needed for increased strength, and large apertures provided where strength is not a primary requirement, thereby to reduce the weight of the e.g. panel.

In common with mesh of more conventional construction, panels made in accordance with the invention can be provided with still further strength characteristics by forming V-shaped ribs in the panel at predetermined positions.

Mesh in accordance with the invention can be used in all conventional mesh applications, but with enhanced performance characteristics born of the improved shear weld strength and ability to modify strength characteristics by employing different sized apertures over the area of the mesh.

Thus, mesh of the invention is ideally suited to use as pallets and stillages, the graded aperture sizes ensuring no bellying. Additionally, a cut mesh does not have the sharp edges inevitable with such as expanded metal, and when cut forms its own selvedge. Such pallets or stillages can be provided with considerable improved strength characteristics by inturning the sides and or ends to form a tray-like structure.

As barrier fencing, small aperture sizes at the lower end of the panel concentrate strength where collision or impact is more likely to occur, with a much reduced prospect of any penetration of the barrier fencing.

When employed as the surface of a walkway, the mesh of the invention when rectangular rods are employed presents

a relatively flat surface on which to walk, and because of its inherent strength lighter gauge material can be used in comparison with expanded metal. The ease with which mesh of different aperture sizes can be produced allows mesh for walkways to be produced that is particularly suited to the prevailing conditions and expected traffic, and sized to prevent objects falling on to the mesh from falling through or to allow their passage, at identified locations. By employing a form of construction where the wire rods of one direction are on edge in relation to the wire rods of the other direction, a flat face can be presented to the users when the construction is employed as a surface of a walkway, the wire rods on edge being positioned below the surface with the provision of major rigidity as has been mentioned above.

Several embodiments of the invention will now be described, by way of example only, with reference to the accompanying drawings, in which:-

Figure 1 is a perspective view of a part of a flat wire mesh construction in accordance with the invention;

Figure 2 corresponds to Figure 1 but shows a second construction in accordance with the invention;

Figure 3 is a perspective view of a security panel employing the flat wire mesh construction of Figure 1;

Figure 4 is a section on the line IV-IV of Figure 3;

Figure 5 is a section on the line V-V of Figure 3;

Figure 6 is an end view of a tray-like structure formed from the wir mesh construction of Figure 1; and

Figure 7 is an end view of a pallet formed from the

wire mesh construction of Figure 1.

In Figure 1, a wire mesh is illustrated and formed by overlapping wire rods 1, 2, which as a consequence of their flat faces in abutting contact provide a relatively large contact area. With the overlapping wires 1, 2 welded to each other at their overlapping points, there is generated a considerably enhanced weld shear strength in the mesh at large constructed in this manner. The mesh illustrated has a rectangular apertures, but it will readily be understood that any required angular disposition of the overlapping wires can be provided, to generate any particular required aperture shape such as, for example, diamond.

A construction such as is illustrated in Figure 1 creates a mesh of a considerable inherent rigidity. However, in the alternative construction as is illustrated in Figure 2, rectangular wires 3 of one direction are in a perpendicular disposition in relation to the wires 4 of the other direction. This still leaves a considerable area of overlap as between the wires where they contact each other, with a weld shear strength substantially increased in comparison with conventional round wire mesh. By having such a configuration, a considerable increase in rigidity of the mesh is provided in the direction of those wires 3 set on edge.

The wire mesh such as is exemplified in Figure 1 is eminently suited to use in the construction of panels such as are illustrated in Figure 3 where what is shown is a security panel. To enhance the inherent rigidity and strength of the

panel, it can be kinked towards its upper end as is shown at 5. Equally, a graduated spacing between horizontal wires 2 can be provided, such that they are more closely spaced towards the lower end of the panels than at the upper end of the panel whereby to provide still greater strength against collision impact. An added advantage of the construction of the invention is that panels can be cut to size, with a substantial alignment as between the, e.g. cut horizontal wires 2, and the edge of the outermost wire 1. The avoidance of any sharp or jagged projection at the edge of a wire panel is of considerable benefit.

When panels made in accordance with the invention are used such as for a walkway, then the construction of Figure 2 is eminently suited because of the considerable resistance to flexing that is provided by having the wires 3 on edge, the walkway having the benefit of a completely flat upper surface for contact by the feet of users, or the hooves of animals when the panels are employed in pens or other animal containment areas.

Another highly advantageous feature of the Figure 1 embodiment of the invention is that panels such as are illustrated are ideally suited to different uses and when relatively simple bending means are all that is required. Thus, as is shown in Figure 6, a relatively narrow panel formed by longitudinal wires 2 and cross wires 1, can readily be converted into a channel to serve the purpose of a tray, simply by bending each of its sides in the same direction such that at least one longitudinal wire 2 is disposed on

edge in comparison with those other longitudianl wires 2 that combine with the wires 1 to form the base of the tray. As is mentioned in relation to Figure 2 the edge disposition of a wire adds considerably to the rigidity of the structure, and consequently the arrangement of Figure 6 provides a high strength and rigid tray suited to many applications, in particular the containing and locating of wire cables.

Similar considerations apply to the creation of such as a pallet. Thus, as is illustrated in Figure 7, a panel formed as is portrayed in Figure 1, can be converted into a pallet by bending each of its sides in the same direction such that, and like the tray of Figure 6, a vertical sidewall is provided with at least one wire 2 in an edgewise disposition in relation to those wires 2 which combined with the wires 1 to form the pallet surface. With the sidewall of an appropriate height, the forks of a fork lift truck can readily go below the surface and lift the pallet with products loaded on it, the rigidity of the whole structure providing adequate support for the load.

CLAIMS

1. A wire mesh comprising a lattic of wire rods, characterised in that the wire rods each have at least one flat face for abutting contact with the flat face of each of the other wire rods in the lattice, to provide contact between the wire rods over an area, nd over which area the wire rods are secured together.

2. A wire mesh as in Claim 1, characterised in that the wire rods are of rectangular cross-section and the connection between the wires in the lattice is by welding.

3. A wire mesh as in Claim 1 or Claim 2, characterised in that rectangular wire rods are formed into a lattice with the wire rods in side face to side face contact.

4. A wire mesh as in Claim 1 or Claim 2, characterised in that rectangular wire rods are formed into a lattice with the wire rods of one direction contacting by their edges the side faces of the wire rods in the other direction.

5. A wire mesh as in Claim 1 or Claim 2, characterised in that rectangular wire rods are formed into a lattice with the wire rods of one direction contacting by their edges the edges of the wire rods in the other direction.

6. A panel when formed from a wire mesh as in Claim 1.

7. A panel as in Claim 6, characterised in that the wire rods which, in use, are in the horizontal direction, have graduated spacings to provide a greater density of

accompanying drawings.

15. A floor surface or walkway when formed from wire mesh substantially as hereinbefore described with reference to Figure 2 of the accompanying drawings.

The Patent Office

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**Application No:** GB 9605625.4 **Examiner:** Alexander Littlejohn
**Claims searched:** 1-15 **Date of search:** 24 April 1996

## Patents Act 1977
## Search Report under Section 17

**Databases searched:**

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.O): B8H (HLC); D1K; E1D (DCF, DLCKM, DLEKMNV)

Int Cl (Ed.6): A01K 3/00; B21F 27/00, 27/08, 27/10, 27/12; B65D 19/10, 19/12; E01C 9/10; E01D 19/12; E03F 5/06; E04C 2/42; E04F 19/10; E04H 17/00, 17/02, 17/04, 17/14, 17/16; E06B 9/01

Other: Online: WPI

**Documents considered to be relevant:**

| Category | Identity of document and relevant passage | | Relevant to claims |
|---|---|---|---|
| Y | GB1563558 | (NV Bekaert) see e.g. Fig 1 | 7 |
| X | GB0895045 | (Kufferath) see e.g. page 2 lines 24-30 | 1,6 |
| X,Y | GB0746287 | (Lotters) see e.g. page 2 lines 21-37 | X:1-6,8-10 Y:7 |
| X | GB0421415 | (Locker) see e.g. page 2 lines 76-83 | 1-6 |
| A | GB0316420 | (British Reinforced Concrete) see e.g. Figs 1,3,4 | - |
| X | US3881832 | (Maguire) see e.g. col 2 lines 50-57 | 1-6,10 |

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